SE | IT | III CBGS
ADC 3|6|2014

QP Code : NP-18735

(3 Hours) **[Total Marks : 80**

N.B. **(1) Q.No.1 .is compulsory**
(2) Attempt any three out of remaining five questions
(3) Assume suitable data wherever required but justify them.
(4)Draw appropriate waveforms wherever required.

Q.1.a) Explain the working of Zener diode as Voltage regulator. (04)

(b) Give the comparison between LED and LCD. (04)

(c) Why Transistor biasing is required? And state the factors to be considered in designing a biasing circuit (04)

(d) Convert the following decimal numbers to Binary, octal and Hexadecimal number.
(i) $(555)_{10}$ (ii) $(7905)_{10}$ (04)

(e) Compare Combinational Logic with Sequential Logic. (04)

Q.2. (a) Design and Implement one digit BCD adder using IC- 7843 (10)

(b)Explain the working of Monostable Multivibrator using IC- 555 (10)

Q.3. (a) Explain any four Linear applications of operational Amplifier (12)

(b) Design a Modulo-9 up counter using 4-bit ripple counter. (8)

Q.4. (a) Implement the following expression using only one 4:1 MUX and few Logic gates

$F(A,B,C,D) = \sum M(0, 1, 2, 3, 6, 8, 11,13,15)$ (10)

(b) Explain Differential Amplifier and explain any one method to improve CMRR. (10)

Q.5. (a) Design a synchronous counter which goes through following states using J-K Flip-Flop.

1-3-5-7-1---- (10)

(b)With a neat logic diagram explain the operation of 5-bit shift Register. (10)

Q.6. Write short notes on the following. (20)
(a) 3-bit Binary to gray code conversion
(b)VHDL Program Format
(c) S-R and J-K Flip-Flop

Con. 13862-14.